



# Draft ISP Consultation Response

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## Smart Wires Response

### Introduction

Smart Wires is pleased to provide this response to the AEMO 2024 Draft ISP consultation. We recognise that this is the culmination of significant ongoing effort and acknowledge the critical role it plays in developing a robust plan to navigate the renewable energy transition while ensuring the delivery of a secure, reliable, and affordable electricity supply for the National Electricity Market (NEM). We therefore welcome the opportunity to contribute toward this important work.

As the leading supplier of Modular Power Flow Control (MPFC) solutions, we continue to see consumers across the world benefit from network investment plans that leverage the advantages provided by MPFC. By balancing power flows across both new and existing circuits to increase the capacity of a transmission corridor, the aim of providing a secure, reliable and affordable electricity supply can be achieved more efficiently, delivering greater MW transfer capabilities for a modest incremental increase in project costs. We see the benefits of MPFC now being demonstrated by transmission network owners across the globe with deployments in operation across Europe, North and South America, and Australia.

It is exciting to see that the ISP has identified opportunities to consider the advantages of MPFC with several proposed network investment options, namely, Queensland SuperGrid South at Woolooga, VNI West at Murray and Thomastown, and the Tasmanian Waddamana to Palmerston supply. We look forward to providing any necessary support to the ongoing evaluation of these project options.

### Additional opportunities to realise the benefits of MPFC

In addition to these projects, we would like to draw attention to further opportunities where we see considerable potential for MPFC to add significant value to existing ISP projects. These projects are opportunities that in some cases have been previously assessed and the associated network benefits identified and quantified, however, at the time of evaluation, the need for the additional transmission capability was not yet established. Since then, the exceptional pace of the energy transition in Australia, driven by the accelerated retirement of coal-fired generation and the burgeoning growth of renewable generation, has created an unprecedented need for increased intra and inter-regional network transfer capacity within the NEM. In this context, we believe that it would be worthwhile to reassess the benefits of these project options.

#### Humelink/Sydney Ring

The original options assessment for the Humelink project considered options that provided a nominal capability increase of around 2,000 MW. As the preferred option, a 500 kV line development between Maragle and Bannaby via Wagga, was able to achieve this without the use of the proposed phase-shifting transformers, the inclusion of power flow control as part of the solution was dismissed and the cheaper MPFC option was therefore not considered.

A subsequent assessment of the benefits of deploying MPFC to address constraints on 330 kV lines approaching Sydney suggested that additional capacity could be provided at a \$/MW ratio that is around 10% of that of the original Humelink project, however, the need for the additional capacity was not

required at that time. With the increased flows that are expected to come toward Sydney from renewable generation projects in south-west NSW and north-west Victoria, as well as flows into Sydney from future NSW REZs, we believe the option of using MPFC to increase the capability of the transmission network into south-western Sydney should be reconsidered as a part of the Sydney Ring supply project.

#### Western Renewables Link

The original plan to establish a new double-circuit from Bulgana to Ballarat to provide additional renewable connection capacity in the Bulgana area has now been revised to allow the planned VNI West NSW to Victoria interconnection to come via this route. Before this revision, studies suggested that up to an additional 700 MW of renewable connection capacity could be provided in the Bulgana area by using MPFC to alleviate overloads on existing low-rated circuits parallel to the planned new double-circuit for a minimal investment relative to the cost of the new lines. The regulatory process that was in place for this project did not provide a suitable opportunity for the benefits of MPFC to be properly assessed as a viable option.

Now that this transmission corridor will not only be used to carry additional wind power from the Bulgana area toward Melbourne, but will also provide connection for the entire north-west Victorian REZ as well as the VNI West interregional transfers, we believe that the management and control of parallel line flows between Bulgana and Ballarat is likely to provide even greater benefits than it would have previously and that an MPFC option to achieve this should be given careful consideration.

#### New England REZ Transmission Link

The New England REZ is an important and substantial renewable energy resource. The existing plan to increase the renewable hosting capacity of this area includes power flow control equipment in some of the options, appearing to notionally be an installation of PSTs. We suggest that an option to use MPFC should be explicitly considered in the project options evaluation at some point to ensure that the potential for a more economical solution is not overlooked, as not all power flow control solutions have the same costs and benefits.

#### Gladstone Grid Reinforcement

The Gladstone Grid Reinforcement encompasses several possible new line builds to provide for substantially higher network flows in this area. With numerous parallel flow paths in the area, the potential exists for benefits to arise from managing parallel line flows in the area to increase the future network capability in the area.

#### Other applications

Numerous other minor applications present themselves throughout the NEM for the economic application of MPFC to fulfil the objectives of the ISP. For example, forecast constraints for lines approaching Melbourne, as outlined in the Victorian TAPR, may be candidates for considering an MPFC solution. Similarly so for other constraints across the NEM that may not justify investment in traditional transmission infrastructure.

### Renewable Energy Zones

More generally, MPFC can be used to improve the benefits provided by other projects that could otherwise be reduced by operational constraints. This is expected to include the development of renewable energy zones (REZs) where new 330 kV, 275 kV, or 220 kV line builds will occur in parallel with lower-rated network elements. Controlling the flow of power on the lower capacity networks can not only allow the capacity of the new lines to be better utilised but if power flow control is considered in the planning of the new lines, higher-capacity lines can potentially be installed.

For this reason, we feel it would be useful for REZ design reports to include more detailed outlines and information of the proposed topology of the REZ network and connections. This would allow market participants to provide more relevant comments on solution options and enhancements in the early planning stages.

We would once again like to thank AEMO for running a highly transparent and consultative process in developing the ISP. AEMO has demonstrated an openness to investigating traditional and non-traditional solutions to maximise benefits for the NEM and ultimately for all consumers. We continue to view the AEMO ISP and consultation process as the benchmark amongst the market segments within which we work around the world.

Yours sincerely,

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